Conference proceedings

2017 EFITA WCCA CONGRESS

European conference dedicated to the future use of ICT
in the agri-food sector, bioresource and biomass sector

Montpellier, France – July 2nd - 6th

2017 EFITA WCCA Congress

Conference Proceedings

Montpellier, France

July, 2nd to 6th

Texts compiled by: JEMA Junior enterprise and Irstea (supervision: O. Naud)

Cover illustration by: JEMA Junior enterprise and Irstea.

N° ISBN: 978-2-85362-686-6.

AWARE, a web atlas for agriculture, environment and research on tropical agronomy, based on open source technologies and interoperable

Tendero A.*[1], **Mézino M.** [1]

1. *CIRAD, Saint-Pierre, La Reunion Island*

Keywords: Geographic Information System (GIS), interoperability, metadata, INSPIRE, GeoNode

Abstract: The main objective of providing digital data via web platforms is to facilitate sharing and exchanges between actors, and to enable the enrichment of data by its various users. The ability of computer systems to function with other systems or products, whether existing or future, defines the concept of interoperability. To do this, interoperability should refer to a standard aimed at structuring the data so that it is understood by the different actors and systems.

Knowing this challenge, the Artists of Remote Sensing Tools, Information System, Technical Simulation and Spatial Analysis (ARTISTS) team at the Center for International Cooperation in Agronomic Research for Development (CIRAD) had set up a web cartographic platform, AWARE [1] for Agricultural Web Atlas for REsearch, gathering all the geographical data available and produced by researchers based in La Reunion Island in various areas such as crop protection, environmental risks, agriculture and integrated resource management, agricultural and food quality. AWARE allows to add layers of spatial information, to create maps from these layers, and to associate documents to them (fig.1). These resources, structured in open catalogs, accessible to all, make AWARE a tool for pooling, sharing and publishing research results for a wide audience: researchers, funders, professionals of agriculture, regional and international institutions… AWARE is also a means of archiving and storing geographic data on a reliable and secure platform. Finally, it relies on profiles management to respect confidentiality and broadcasting rights.

Technically, AWARE is based on GeoNode [2], an open source geospatial content management system. GeoNode is more specifically a web-based application and platform for developing Geospatial Information Systems (GIS) and for deploying Spatial Data Infrastructure (SDI). Its development began in 2010, by the company BoundlessGeo, and the first sponsors are the United Nations with the World Food Program. GeoNode plays a key role for implementing interoperable spatial data infrastructures as it provides data and metadata management. These metadata are used as search criteria within AWARE data catalogs, and their export according to different standards (Dublin Core from w3c, ISO...) is possible and thus provides an accurate description of the datasets.

GeoNode also ensures technical interoperability by implementing the Open Geospatial Consortium [3] standards better known as web services. This interoperability allows AWARE to be harvested and to harvest other remote geographic catalogs without physically having the data. In other words, AWARE can inventory data from other platforms in its catalogs and conversely its data can be listed in catalogs of other platforms. Interoperability also allows to serve spatial information to GIS software such as Quantum GIS or ArcGIS by making it visible, accessible and usable.

Another advantage of using free technology such as GeoNode is to be able to contribute to its evolution by developing new functionalities and transferring them to the developer community. Thus, functionalities developed by the ARTISTS team were integrated into the GeoNode master branch.

In Addition, the ARTISTS team has chosen to follow the INfrastructure for SPatial Information in Europe [4] directive (INSPIRE) in order to be compatible with French geographical data producers who have to apply it, who make their data available to CIRAD and who can be interested by the data of AWARE. The INSPIRE directive, which entered into force in 2007, aims to create a European SDI by 2021 for the purposes of environmental policies and activities which may have an impact on the environment. This SDI enables the sharing of spatial information on the environment between public sector organizations, facilitates public access to spatial information across Europe, and contributes to decision-making across borders. INSPIRE is based on a number of principles and rules including metadata management [5]. It recommends creating and entering metadata such as data identification, classification by ISO categories, keywords, provenance, time references, and access and use constraints in a detailed and accurate manner. It complements and reinforces the semantic interoperability between SDIs and thus allows to propose a richer content.

By creating the AWARE platform, the ARTISTS team has created a real digital heritage of spatial information for CIRAD in La Reunion Island, and more widely for CIRAD. It meets the needs and objectives of a collective, first at the level of the content by cataloging the geographical data with reliable metadata, by enhancing the results of its research works, by improving its dissemination then at the level of the container , namely the SDI, by choosing a license-free, participatory, interoperable technology allowing it to be transferred to actors from the South countries with which the ARTISTS team works, and some of which may not necessarily assume a solution under private license .

References

[1] CIRAD, Agricultural Web Atlas for Research, available from: http://aware.cirad.fr. Accessed 19 April 2017

[2] GeoNode Community, Open Source Geospatial Content Management System: GeoNode, available from http://geonode.org. Accessed 19 April 2017

[3] Open Geospatial Consortium, available from http://www.opengeospatial.org/ Accessed 19 April 2017

[4] European Commission, available from http://inspire.ec.europa.eu/ Accessed 19 April 2017

[5] Conseil National de l'Information Géographique, available from http://cnig.gouv.fr/wp-content/uploads/2014/01/Guide-de-saisie-des-%C3%A9l%C3%A9ments-de-m%C3%A9tadonn%C3%A9es-INSPIRE-v1.1-final-light.pdf Accessed 19 April 2017

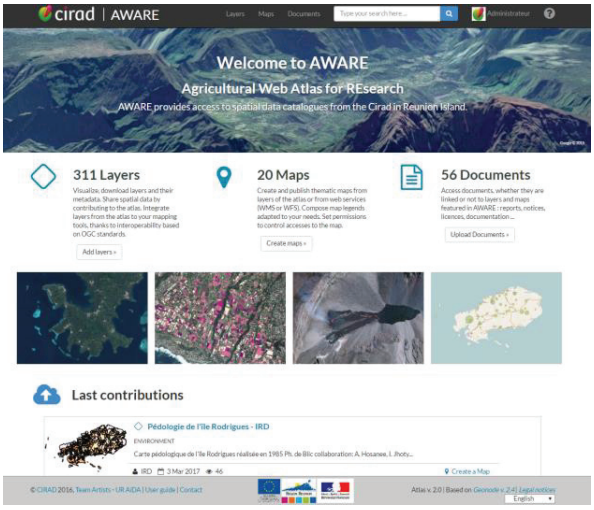

Fig1.AWARE homepage